

AMENDMENTS TO THE SPECIFICATION:

Please replace original paragraph [0011] with the following amended paragraph [0011]:

[0011] FIGURES 1A-1B sets forth an embodiment of an HID electronic ballast;

Please replace original paragraph [0013] with the following amended paragraph [0013]:

[0013] FIGURE 3 depicts a level shifted starting voltage to a HID lamp during the starting obtained through the circuit of FIGURES 1A-1B.

Please replace original paragraph [0014] with the following amended paragraph [0014]:

[0014] Turning to FIGURES 1A-1B, illustrated is a HID electronic ballast circuit 10. HID electronic ballast 10 is a single stage ballast design which combines a power factor correction circuit and an inverter circuit. In addition to the power factor correction circuit and switching inverter circuit being integrated into a single stage, a full-bridge rectifier is also integrated with the switching inverter circuit. A general discussion of the integration between a full-bridge circuit and a switching inverter circuit is discussed in U.S. Application Serial No. 09/778,337, entitled Integrated Bridge Inverter Circuit for Discharge Lighting, filed February 7, 2001, Notice of Allowance mailed February 26, 2002, wherein the application is herein fully incorporated by reference.

Please replace original paragraph [0018] with the following amended paragraph [0018]:

[0018] Also illustrated in FIGURES 1A-1B is resonant lamp circuit 36 which receives power from switching inverter section 26 to supply a load 38, such as an HID lamp connected across terminals 40 and 42. Resonant load circuit 36 includes a main resonant inductor 44 and a main resonant capacitor 46. The main resonant capacitor 46 connects at one end to main resonant inductor 44, and at its other end to the input of full-bridge section 16 at a junction between diodes 18 and 22, and to input inductor 48 of input filter 14.

Please replace original paragraph [0022] with the following amended paragraph [0022]:

[0022] HID ballast 10, instead of requiring a higher lamp voltage start-up signal, the level shifting circuit 50 of FIGURES 1A-1B, is implemented to shift the high frequency lamp voltage signal as shown in FIGURE 3. Specifically, the high frequency lamp voltage 70 has a 1.5 kv peak. Level shifting circuit 50 shifts this signal up approximately 1.5 kv. By this configuration, the same AC signal will provide the 3 kv peak voltage to start the lamp. It is to be understood while a 3kv peak voltage is a common peak starting voltage for HID lamps, the present application may also be applied to systems and lamps having different starting requirements.

Please replace original paragraph [0023] with the following amended paragraph [0023]:

[0023] Returning attention to FIGURES 1A-1B, operation of level shifting circuit 50 is discussed in greater detail. As previously noted, level shifting circuit 50 is designed by having level shifting winding 54 coupled to main inductor 44. This coupled winding arrangement provides energy to level shifting resistor 56 and level shifting diode 60 in order to charge level

shifting capacitor 58. In this manner, a DC voltage level is added to the signal supplied to lamp 38 held between terminals 40 and 42. Therefore, in this embodiment, use of level shifting circuit 50 provides a peak voltage sufficient to start the lamp without increasing the current through the resonant components. Therefore, the peak voltage supplied to the lamp is increased without requiring an increase in the component sizes and/or increasing the stress on the components.

Please replace original paragraph [0025] with the following amended paragraph [0025]:

[0025] It may be appreciated from FIGURES 1A-1B that this level canceling device 80 is also in series with inductor 82, where one end of inductor 82 is connected at a junction to diode 84, capacitor 86 and an active switching device 88, in which in one embodiment may be an FET. In this circuit, 88 is used to provide the duty function for the provided lamp signals. It is noted that in the Application Serial No. 09/778,337, the function presently provided by active switching device 88 was accomplished by a passive switch design such as a diode or other passive device. More detail regarding the active switching provided by active switching device 88 will be discussed in greater detail in following sections of this discussion.

Please replace original paragraph [0029] with the following amended paragraph [0029]:

[0029] Turning to another aspect of the HID ballast 10 of FIGURES 1A-1B, HID ballast 10 is designed to be a discrete device separate from the lamp. Therefore, it is common that the HID ballast 10 is engineered to outlast the lamp which it is powering. More specifically, in one embodiment, the HID ballast is designed to have a life expectancy two or three times or more the predicted life of its HID lamp. Since the HID ballast is designed

to outlive the lamp, it is useful to provide protection circuitry to protect it when the lamp comes to its end of life, or is otherwise damaged or defective.

Please replace original paragraph [0051] with the following amended paragraph [0051]:

[0051] Control of active switching device 88 may be accomplished by a variety of mechanisms, including timing circuit block 34. Timing circuit block 34 may include control logic in the form of individual components or as an integrated circuit, such as a timing chip or microprocessor. Therefore, while timing circuit block 34 is shown in block diagram in FIGURES 1A-1B, it is to be appreciated that various individual components may be arranged to obtain the desired timing sequences which are appropriate either by the individual component arrangements or through the use of an integrated chip.

Please replace original paragraph [0054] with the following amended paragraph [0054]:

[0054] Also shown in FIGURES 1A-1B is a power circuit employed by resistive divider circuit resistor 122 and 124 where resistors 122 and 124 are joined at a node at the gate of active switching device 88. The second end of resistor 122 is tied to common, and the second end of resistor 124 is connected to a connector pin 126, which is in operative connection to a power supply generator circuit 128 for converter circuit 20. A Silicon Controlled Rectifier (SCR) 130 is connected at one end of active switching device 88, and resistors 124, 126, and at its other end to the common bus 92. The gate of the SCR 130 is connected to resistor 132, which in turn is connected to common bus 92. By use of this design, if for some reason the lamp 38 does not start and the circuit is disabled, then the power to active switching device 88 is resupplied, to provide an automatic reset of active switching device 88. Particularly, if the lamp 38 does not start after

a predetermined time, the circuit will be reset including the timing circuit 34. If the lamp starts, then power is continued and the system operates as normal.

Please replace original paragraph [0056] with the following amended paragraph [0056]:

[0056] The described topology provides several benefits, including a high-power factor, which is a range of up to 99%, with a total harmonic distortion (THD) lowered by as much as 5% or more. This design ensures the meeting of existing IEC standards such as IEC-61000-3-2 for harmonic distortion. Also, the crest factor obtained by the HID ballast of FIGURES 1A-1B may be 1.4 to 1.9 or preferably approximately 1.7. This design will also minimize the current stress on switches 28 and 30.